Message

From: Krentz, Steven [steven_krentz@fws.gov]
Sent: 1/11/2022 4:00:30 PM
To: Wax, Peter N. [pwax@nd.gov]; Kesler, Karen [Kesler.Karen@epa.gov]; Beaman, Joe [Beaman.Joe@epa.gov]; Aaron Larsen [allarsen@nd.gov]
CC: Wirick, Holiday [wirick.holiday@epa.gov]; Sengco, Mario [Sengco.Mario@epa.gov]; Wilson, Ryan [ryan_wilson@fws.gov]
Subject: RE: [EXTERNAL] Se_Criteria_More_Water_Samples_4_Pallids

Morning Pete,

I will say that you have an eloquent narrative that encompasses history really well.

Related to Karen's question on whether they continue to forage. From limited evidence, it appears these fish do eat prior to spawning during the early migration. However, given the locality of the segment, they are foraging in the same general areas throughout the year. These fish can easily make 30-40 mile swims during an overnight period. Therefore, fish located in the reach downstream from the confluence prior to spring, have access to the entire reach during most of the year for foraging. Once they begin their upstream migration and with the amount of ultrasound that's been done and some limited diet work, Ryan (I also added to the conversation) may have more info on the diet during the active migration period, just prior to and during spawning. Keep in mind that eggs are generally developing over a two year period and are just waiting to reach final maturation just prior to spawning.

The story of where the heritage adults came from is speculative. Given the propensity for the existing adults to potentially spawn in multiple locations from the mainstem Yellowstone to upstream tribs including the Powder and historically the Tongue and assuming a connected downstream river system prior to the dams, these fish could have successfully hatched and recruited in the open system and from most of these potential locations. This is under the assumption that the heritage adults we have left predate the dams.

I agree, with Intake Diversion Dam being fully modified, the fish can help tell us where they want to go.

Steve

From: Wax, Peter N. <pwax@nd.gov>
Sent: Tuesday, January 11, 2022 9:38 AM
To: Kesler, Karen <Kesler.Karen@epa.gov>; Beaman, Joe <Beaman.Joe@epa.gov>; Krentz, Steven <steven_krentz@fws.gov>; Larsen, Aaron L. <allarsen@nd.gov>
Cc: Wirick, Holiday <wirick.holiday@epa.gov>; Sengco, Mario <Sengco.Mario@epa.gov>
Subject: [EXTERNAL] Se_Criteria_More_Water_Samples_4_Pallids

Dear Karen:

Karen writes: *So I was thinking about your pallid sturgeon collection a little bit more and I had another thought that we didn't discuss a couple of weeks ago. As I understand it, these fish migrate to spawn (although I'm not sure how far with*

the current dams). Do you know if they keep eating once they start this migration? I'm thinking water might need to be collected from a different location than where the eggs are collected for a BAF if they hadn't been in that location for the egg development. I think it may be best to collect water from where they reside before they start their migration. I don't know much about the species, so its probably worth talking to folks who know more than me about it. Joe, any thoughts?

Fantastic! Thank you. Often I feel alone with my thoughts.

Adding Steven Krenz to this conversation. Steven is the expert on Pallids and he knows most of the original individuals still living personally.

Steven please jump in and add what you think might be useful.

What I Think I Know:
Historically Pallid traveled up steam into Yellowstone River and Tributaries to spawn.
It is my belief that a major spawning location is the Powder River (Where Sitting Bull's Hunkpapa band summered, fished, swam, and hunted buffalo).
The Yellowstone/Powder confluence is about 170 miles (straight line not river) from the Yellowstone/Missouri River confluence.
The few naturally reproduced fish still living might have been spawned in the Powder?
There are other tributaries that might be historical spawning targets like the Tongue (another 20 or so further) and they might have went all the way to Wyoming (450+ miles).

Barriers: Presently there is a BLM low-head irrigation diversion dam near the Montana/North Dakota border blocking upstream travel of the big fish (70 miles upstream of the Missouri/Yellowstone confluence).
It is the only major injury to the last Un-Dammed Big-River in the United States.

What the Fish Can Say: My belief is that fish passage around the structure has been completed this year. If the barrier is overcome – **"the old fish might tell us where to sample additional waters."**

Note 1: I cannot see any reason that would prevent sampling additional streams - I would do it on my time off if need be.

Sincerely,

Pete

From: Kesler, Karen <Kesler.Karen@epa.gov>
Sent: Tuesday, January 11, 2022 8:05 AM
To: Wax, Peter N. <pwax@nd.gov>; Beaman, Joe <Beaman.Joe@epa.gov>
Cc: Wirick, Holiday <wirick.holiday@epa.gov>; Sengco, Mario <Sengco.Mario@epa.gov>
Subject: RE: Se Criteria & Big River Fish

Hi Pete,

So I was thinking about your pallid sturgeon collection a little bit more and I had another thought that we didn't discuss a couple of weeks ago. As I understand it, these fish migrate to spawn (although I'm not sure how far with the current dams). Do you know if they keep eating once they start this migration? I'm thinking water might need to be collected from a different location than where the eggs are collected for a BAF if they hadn't been in that location for the egg

development. I think it may be best to collect water from where they reside before they start their migration. I don't know much about the species, so its probably worth talking to folks who know more than me about it. Joe, any thoughts?

- Karen

Karen Kesler, PhD
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From: Wax, Peter N. <pwax@nd.gov>
Sent: Thursday, December 9, 2021 1:06 PM
To: Wirick, Holiday <wirick.holiday@epa.gov>; Aaron Larsen <allarsen@nd.gov>; Wert, Joshua E. <jewert@nd.gov>; Fleisig, Erica <Fleisig.Erica@epa.gov>; Sengco, Mario <Sengco.Mario@epa.gov>; Kesler, Karen <Kesler.Karen@epa.gov>; Wert, Joshua E. <jewert@nd.gov>; Beaman, Joe <Beaman.Joe@epa.gov>; Baker, Joshua <Baker.Joshua@epa.gov>
Cc: Todd, Andrew <Todd.Andrew@epa.gov>
Subject: Se Criteria & Big River Fish

Dear All:

RE: Collecting Big River fish for Se Criteria Development

We had a call with the USFWS to see if they would be open to us piggy backing with their fish capture efforts on the Missouri River to get some "Big River" fish (i. e., sturgeon, burbot) for the selenium standards work.

It was a great meeting. The Service is open to helping us out. My only regret is that Erica or Karen were not there as there were some questions on the best time (sexually) to collect fish and number of individuals needed.

Deep Thoughts: It appears possible that we could get some eggs from Pallid Sturgeons. These are the holy grail of endangered fish. These animals have been around for 70 million years. Males live decades and females a century or more. There are very few of the original giants left. And while eggs might not be an ideal comparison with the whole fish we are currently colleting - eggs might still be useful for Se criteria development (possibly Missouri River specific) and the ultimate survival of pallid sturgeons.

We are having an internal meeting on January 21 at 2:00 PM Central time to discuss:

1) Species of Interest
2) The number of individuals (by species) we would target to not only assist with an eco-region criteria but possibly a Missouri River criteria.
3) Laboratory (might want our lab to run additional analysis like Hg or other elements of concern).

Since we are likely to generate more questions, I was wondering if the selenium team or at least a few select members from the team would like to attend. If so, I would send out an invite.

Some additional information:

1) It is my understanding that with pallid, paddlefish, sickle fin and sturgeon chub work being done on the big river by the USFWS will be multiple years and we might be able to get multiple bites at the apple.
2) While eggs are not a direct comparison it might be possible to build a relationship with whole body data and shovel nose sturgeon

Going to the dogs,

Peter